

WHAT IS CLAIMED:

1. An optical filter for an accelerated weathering device, the optical filter comprising a glass having a lead content of between 0.5% and 50% by weight.

2. The optical filter of claim 1 wherein the glass is cylindrical.

3. The optical filter of claim 1 wherein the glass has a thickness of between 0.7mm and 10mm.

4. The optical filter of claim 3 wherein the glass has a lead content of 30% by weight.

5. An optical filter assembly for manipulating spectral power distribution, the optical filter assembly comprising:

a lead glass optical filter having a lead content of between 0.5% and 50% by weight; and

an ultraviolet transmissive optical filter operably coupled to the lead glass optical filter.

6. The optical filter assembly of claim 5 wherein the ultraviolet transmissive optical filter is constructed from quartz glass.

7. The optical filter assembly of claim 5 wherein the ultraviolet transmissive optical filter includes an infrared absorbing coating.

8. The optical filter assembly of claim 5 including a plurality of ultraviolet transmissive optical filters.

9. The optical filter assembly of claim 8 including two ultraviolet transmissive optical filters.

10. The optical filter assembly of claim 9 wherein the lead glass optical filter is disposed between the ultraviolet transmissive optical filters.

5 11. An optical filter for an accelerated weathering device, the accelerated weathering device having a light source providing illumination, the optical filter comprising:

a lead glass having a thickness selected such that illumination passed through the lead glass has

10 a first ratio of a first total irradiance for wavelengths shorter than 290nm to a second total irradiance for wavelengths between 300nm to 400nm, wherein the first ratio is less than 2.0×10^{-6} ; and

a second ratio of an irradiance at 310nm to the second total irradiance, wherein the second ratio is at least 1.2×10^{-3} .

15 12. The optical filter of claim 11 wherein the thickness of the lead glass is selected to provide a cut-on wavelength for the illumination passed through the lead glass of between 290nm to 300nm.

20 13. The optical filter of claim 11 wherein the illumination from the light source includes a spectral component of at least 290nm to 400nm.

14. The optical filter of claim 11 wherein the illumination from the light source includes an irradiance of between 0.35 W/m^2 and 1.31 W/m^2 at 340nm.

25 15. An optical filter for an accelerated weathering device, the accelerated weathering device having a light source providing illumination to pass through the optical filter and become filtered illumination, the optical filter comprising:

a lead glass having a thickness selected such that the filtered illumination has

30 a cut-on wavelength of between 290nm and 300nm; and
a ratio of an irradiance at 310nm to a total irradiance for wavelengths between 300nm and 400nm wherein the ratio is at least 1.2×10^{-3} .

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16. An optical filter assembly for an accelerated weathering device, the accelerated weathering device having a light source providing illumination, the optical filter assembly comprising:

an ultraviolet transmissive optical filter;

5 a lead glass operably coupled to the ultraviolet transmissive optical filter, the lead glass having a thickness selected such that illumination passed through the optical filter assembly has

a first ratio of a first total irradiance for wavelengths shorter than 290nm to a second total irradiance for wavelengths between 300nm to 400nm, wherein
10 the first ratio is less than 2.0×10^{-6} ; and

a second ratio of an irradiance at 310nm to the second total irradiance, wherein the second ratio is at least 1.2×10^{-3} .

17. The optical filter assembly of claim 16 wherein the ultraviolet
15 transmissive optical filter provides at least 60% transmission of light at 250nm and at least 80% transmission of light at 300nm.

18. An accelerated weathering device suitable for testing product samples, the accelerated weathering device comprising:

20 a weathering fixture adapted to hold the product sample; and
an illuminator disposed approximate the weathering fixture, the illuminator adapted to provide illumination to the product sample;

wherein the illuminator includes

25 a light source having spectral characteristics in at least the range of 200nm to 400nm; and

an optical filter disposed proximate the light source, the optical filter comprising a glass having a lead content of between 0.5% and 50% by weight.

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